

## REMARKS

This response is supplemental to the response filed July 23, 2009, the remarks of which are hereby included by reference in their entirety. Applicant respectfully requests reconsideration of the present application in view of the reasons that follow.

### **Rejection under 35 U.S.C. § 103**

Claim 6 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 3,015,558 Grant *et al.* (hereafter “Grant”) as allegedly evidenced by “Material Hardness”, in view of U.S. Patent No. 6,503,345 to Klarstrom (hereafter “Klarstrom”). Applicants respectfully traverse this rejection for at least the reasons set forth below.

In addition to the remarks previously made in the response submitted July 23, 2009 regarding the combination of Grant, Material Hardness, and Klarstrom, Applicant respectfully requests reconsideration and withdrawal of this rejection for the additional reasons that follow. As shown below, the claim 6 cutter provides superior, indeed unexpected, results over the applied prior art.

The cutter of claim 6 comprises base Ni, Cr, and Al as well as other elements such as Mg, Ca, B, and rare earth element in the amounts recited in claim 6. The recited amounts of Mg, Ca, B, and rare earth element added to the Ni-Cr-Al type alloy for the cutting tool provide a cutting tool excellent in hot workability and in cutting performance. These elements provide deoxidization and desulfurization effects and can be used as additives to improve the hot workability. In this regard, Applicants wish to direct the PTO’s attention to the second paragraph on page 13 of the originally filed specification.

Excellent hot workability can greatly reduce crack-formation in the crystal structure, making it possible to effectively reduce blade-breakage when the alloy is worked into a cutter or when the cutter is used as a cutting blade. As a result, excellent cutting properties can be maintained for a longer time period as evidenced by the cut test discussed in the present specification. The Mg, Ca, B, and rare earth elements can promote a uniform aging precipitation reaction so that aging temperature is lowered. As a result, the cutter made from

the alloy exhibits excellent hardness and high toughness. When the additive elements of claim 6 are used in the alloy, a sensitivity of the alloy with respect to a hot-working temperature can be effectively lowered, as discussed in the remarks submitted July 23, 2009.

Enclosed with this supplemental response is a declaration under 37 C.F.R. § 1.132 by inventor Takashi Rokutanda that includes data from additional experiments conducted by the Applicant. These experiments include additional samples with various compositions to provide data that is commensurate in scope with the claimed invention of claim 6, samples with excessive amounts of additive elements to demonstrate that these additive elements provide effects, and samples corresponding to Examples 2 and 7 of Grant.

Samples corresponding to Examples 2 and 7 of Grant were prepared to compare samples representing the claimed invention of claim 6 with the closest prior art. See MPEP § 716.02(e). Applicant notes that the Applicant is not required to compare the claimed invention to any features suggested by a combination of Grant, Material Hardness, and Klarstrom. See MPEP § 716.02(e), Part III. Examples 2 and 7 of Grant were selected as the closest prior art for comparison during the interview with Examiner George Wyszomierski on July 16, 2009.

Applicant respectfully submits that the data provided in the Rokutanda declaration demonstrates that the claimed invention of claim 6 (exemplified with data represented by samples 1-8) provides significantly improved properties, namely a combination of hot workability and cutting performance, in comparison to Examples 2 and 7 of Grant, the closest prior art. Please refer to the explanation and accompanying remarks, e.g. Paragraph 12, of the Rokutanda declaration.

In addition, the disclosure of Applicant's application demonstrates that a cutter having the composition of claim 6 provides superior properties. For example, Figure 5 of Applicants' application demonstrates that alloys having a composition of 33 mass % Cr, 38 mass % Cr, and 43 mass % Cr, with each having an aluminum content of 3.8 % Al and balance Ni, have superior cutting performance than alloys with the same aluminum content and balance Ni but 31 mass % Cr and 45 mass % Cr. Figure 6 of Applicants' application

demonstrates that alloys having a composition of 38 mass % Cr and balance Ni with aluminum contents of 2.4, 3.8, 4.9, and 5.7 mass % Al have superior cutting performance to alloys with 38 mass % Cr and balance Ni, but with 2.2 mass % Al and 6.3 mass % Al. Furthermore, samples 1, 2, 4, 6, 8, 10, and 16-18 of Table 2 of Applicant's application demonstrate improved results.

For at least the reasons discussed above, Applicant respectfully submits that the claimed invention of claim 6 provides an unexpectedly improved result over the asserted closest art, which rebuts any general allegation that claim 6 would have been obvious over the combination of Grant, Material Hardness, and Klarstrom (and Applicants do not concede that any prima facie case of obviousness has been shown).

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the outstanding rejection under § 103.

Applicant expressly requests a telephone interview if the Examiner does not believe that this case is in condition for allowance after review of this supplemental response and the response of July 23, 2009.

### **Conclusion**

Applicant submits that the present application is now in condition for allowance. Favorable reconsideration of the application is respectfully requested.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing or a credit card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith,

Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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Date \_\_\_\_\_

By \_\_\_\_\_

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